

RF Design of Spoke Resonators for the AAA Project

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In this presentation the electromagnetic design of a 2-gap low- β superconducting spoke resonator for the AAA project is presented. The main emphasis is on the design strategy and conventions for picking specific geometry features. The choices of the explicit cavity dimensions for this resonator are driven by its use immediately downstream from the LEDA Radio-Frequency Quadrupole (RFQ). The resonator frequency is 350 MHz, its length corresponds to a geometric β (βg) of 0.175. An important aspect of the design is the integration of RF, mechanical properties and interaction with ancillary components, like the power coupler. The resulting RF properties, like Q, R/Q, peak surface fields and acceleration efficiency are very reasonable for such a low- β structure.